Abstract Submitted to
Summer Meeting of Society of Environmental Toxicology and Chemistry
Plymouth, Massachusetts - July 15-16, 1995

TECHNOLOGIES FOR DECONTAMINATING DREDGED ESTUARINE SEDIMENTS FROM NY/NJ HARBOR

Nicholas Clesceri[1], Michael DeLuca[2], Kerwin Donato[3], Keith Jones[4], George Korfiatis[5], Audrey Massa[6], Gerald McKenna[7], and Eric Stern[8]

The bay areas surrounding New York/New Jersey Harbor (Harbor) are naturally shallow, acting as catchments for river-transported sediments and solids from surface point and nonpoint sources. Sediments from the Harbor must be routinely dredged to maintain navigable water depths for shipping channels and berthing areas for commerce and safe navigation (annually an average of 6-8 million cubic yards - c.y.). Ocean disposal at the Mud Dump Site (6 nm. east of Sandy Hook, NJ) has been the primary alternative for disposal of dredged materials from the Harbor.

Dredged sediments must pass testing criteria prior to unrestricted ocean disposal. The recently revised *Regional Guidance for Performing Tests of Dredged Material Proposed for Ocean Disposal* (Draft December 1992), has established more stringent biological and chemical test criteria. As a result, the volume of dredged material designated as contaminated and prohibited from ocean disposal has dramatically increased. Dredged sediments from the Harbor may contain elevated levels of a wide variety of contaminants, including: heavy metals, polynuclear aromatic hydrocarbons (PAHs), and organochlorines such as dioxins, polychlorinated biphenyls (PCBs), and chlorinated pesticides.

Under Section 405 of the Water Resources Development Act (WRDA), the U.S. Environmental Protection Agency, Region 2 and the U.S. Army Corps of Engineers - New York District are jointly managing an investigation of sediment-decontamination technologies for dredged material management. WRDA 405 authorizes a fast-track (two-year) investigation, including testing and demonstration, of decontamination technologies to treat contaminated sediments in an environmentally protective and cost-effective manner. Technical support and assistance is being provided to this project by the Brookhaven Rensselaer Environmental Partnership-Multi State Alliance (BREP-MSA), which includes Brookhaven National Lab, New Jersey Institute of Technology, Rensselaer, Rutgers University and Stevens Institute of Technology. Treatment technologies must be capable of sufficiently reducing the contaminant levels by separation, destruction, immobilization and/or other methods that render dredged sediments suitable for ocean disposal, upland disposal, or preferably, beneficial use. Treatment will likely require several different processes due to the complex and varying nature and levels of contaminants and their widespread spatial distribution within the Harbor. A complete treatment train will be developed to encompass dredging, pretreatment, treatment, post-treatment, residuals management, end disposal and/or beneficial use, and all storage and transport involved therein. Although the exact amount of material requiring treatment in the future has yet to be determined, an estimate of approximately 500,000 c.y./year is the target figure for projecting full-scale treatment operations.

---

[1]Rensselaer Polytechnic Institute, [2]Rutgers University, [3]USACE-NYD, [4]Brookhaven National Lab, which is operated under USDOE Contract No. DE-AC0276CH00016, [5]Stevens Institute of Technology, [6]USEPA Region 2, [7]New Jersey Institute of Technology.